

PREOPERATIVE PREPARATION OF THE SURGICALLY HANDICAPPED PATIENT*

REPORT OF CASES

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IN our efforts to minimize the hazards of surgery, everything possible should be done to establish in the patient the highest degree of physiologic balance through a proper preoperative treatment. The operation itself forms but one link in the chain of desired results. The most skillful operative technique can be embarrassed by unexpected complications. Fatal results not infrequently follow inadequate preoperative preparation.

Most patients undergo surgery satisfactorily. The routine examination may reveal no other pathology than that for which the surgery is to be done. However, we have a large group of patients who are physically so handicapped as to require a most painstaking examination and special preoperative preparation, which should be done in association with a competent internist. It is impossible in a short paper to cover all surgical problems, but I shall discuss several which have been of greatest interest to me.

SHOCK

The clinical factor of psychical shock is well recognized. That patient is a poor surgical risk who is apprehensive, markedly worried, and has spent sleepless nights. A high reflex irritability may induce a ventricular fibrillation in the early stage of anesthesia, causing instant death. It is well known that anesthesia deaths usually occur during or soon after the excitement period of inhalation anesthesia. Consequently, all possible precautions should be taken to protect the nervous system. An overstimulated or exhausted sympathetic nervous system may create many postoperative complications, such as tympanitis, ileus, or gastric dilatation.

It would be ideal to have the patient sleep continuously from the night before the operation until several hours after leaving the operating room. This we have accomplished with some degree of success by giving orally sodium amytal, grains three or four, at nine p.m., followed by sodium amytal, grains four, two hours before the operation. If the drug has not produced the required effect, we do not hesitate to give a small amount of sodium amytal intravenously. By this method the patient is put to sleep in her bed, consequently does not see the operating room and has no fear of the anesthetic. The four or five hours of sleep following the operation minimize the usual postoperative distress, such as nausea and vomiting. However, the use of sodium amytal is not devoid of danger. It should not be used on

patients having heart disease, nor those with very high blood pressure, nor the weak and aged. We hope that there will eventually be discovered an efficient substitute for amytal which may be used on all types of patients without any danger.

DIAGNOSIS

Diagnosis is, of course, in every case the foundation of treatment and prognosis. All symptoms must be carefully accounted for. It often happens that a foreign complication ensues postoperatively, not traceable to the operation itself, but to a co-existent disease, such as unrecognized goiter which has produced a severe postoperative reaction. Much can be accomplished in a complicating thyroid crisis when such a reaction is recognized early. But death may ensue in spite of all treatment if the attack is of sufficient intensity. I recall an exacerbation of a latent tertian malaria as the cause of high fever following a pelvic operation, in which instance quinin therapy allayed our fears of infection.

Occasionally we have a patient with a toxic goiter and another surgical disease. The question arises as to which condition should be treated first. It is generally conceded that thyroidectomy has the operative precedence, unless the other lesion is endangering the patient's life, as, for instance, severe bleeding from a fibroid, in which case the hysterectomy should have primary attention. However, this patient should be prepared as for a thyroidectomy; that is, by rest in bed, Lugol's solution and sedatives, so as to forestall any postoperative thyroid complication.

GOITER

Goiter, uncomplicated by any other disease, in many cases presents a very serious problem. It might not be amiss to recapitulate some of the more important symptoms and signs of this disease which indicates a serious surgical risk.

1. Marked loss of weight over a short period of time.
2. Excessive instability of the nervous system.
3. Severe exophthalmos (in a small percentage of patients).
4. Dehydration and impending acidosis.
5. Large, hard thyroid gland.
6. Myocardial changes.
7. Hyperthyroidism not controllable by iodine therapy.
8. A long period of iodine treatment.
9. Recent recovery from a thyroid crisis.
10. Hyperthyroidism in young children.

This group of goiter patients requires long preoperative preparation with constant study and observation by both the internist and the surgeon, as they together can best determine when the patient is prepared for surgery. Thyroid surgery is never an emergency and the surgeon is not warranted in jeopardizing the life of the patient who is not prepared for the operation. The patient who does not survive an operation for goiter

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is a victim of too much surgery, regardless of surgical skill. Therefore, if the surgeon doubts the patient's ability to stand a subtotal thyroidectomy, only a lobectomy should be done. If doubtful about a lobectomy, a ligation of one pole only should be done.

HEART

In considering whether surgery is indicated on a patient with a known heart disease, the decision rests entirely on whether the operation is elective or an emergency. In this situation, the internist's advice and counsel are of paramount importance. In those patients requiring emergency surgery, the heart pathology should have less consideration if it is thought that surgery offers a means of saving the patient's life. Every precaution should be taken to reduce the load which the heart must carry. The following measures should be employed:

1. *Anesthesia.*—One-half to one per cent novocain is probably the safest anesthetic to use. However, not all operations can be performed under local anesthesia. As much of the operative work as possible should be done with local and the operation completed under inhalation anesthesia.

There is considerable controversy as to whether nitrous oxide or ether is the safest inhalation anesthetic to use. The safest one is the one which does not rob the patient of too much oxygen as a state of anoxemia should not be produced.

In the hands of a very competent anesthetist, no doubt nitrous oxide can be used with safety, but in the average anesthetist's hands ether given by the open method is the safer anesthetic.

Spinal anesthesia is contra-indicated because of the possible lowering of the blood pressure, thereby reducing the blood supply to the coronary vessels.

2. *Fluids.*—Fluids should be given subcutaneously or by proctoclysis, and should not be given intravenously unless an emergency should present itself. If intravenous glucose or a blood transfusion should become necessary, they should be given in very small amounts and very slowly, so as to prevent the rapid increase of the blood volume.

REPORT OF CASE

The following case illustrates the risk one may take in an emergency:

The patient was a male, age seventy-eight, entered the hospital suffering from a twenty-four hour strangulation of a right indirect inguinal hernia. The blood pressure was 170/70, and the pulse count was 140 per minute. The patient had vomited many times. The abdomen was greatly distended. This patient had previously been under treatment for coronary disease. Accordingly, novocain, one-half of one per cent, was used as infiltration anesthesia. Postoperatively, fluids were given subcutaneously and rectally, none given intravenously. The convalescence was quite stormy but the patient recovered. Before leaving the hospital he insisted on having his other inguinal hernia repaired, fearing it would become strangulated. This operation was refused because the danger resulting from strangulation was, in his case, not as grave as that of an elective herniotomy.

Elective surgery allows sufficient time to have the heart carefully studied and the cardiac reserve estimated. Valvular disease alone, if the heart is compensated, is usually not a contra-indication to surgery. I doubt that elective surgery is ever justifiable in marked coronary disease. The question is not what the heart can endure, but how much the patient will benefit by the operation. For example, one may assume considerable risk in operating upon a goiterous patient with heart damage, for the improvement following surgery usually outweighs the risk taken. But in such operations as herniotomies and pelvic repair, the improvement is not sufficient to warrant the risk.

OBSTRUCTIVE JAUNDICE

In patients with obstructive jaundice the results of preliminary study and preoperative preparation have been found to justify the required delay of operation. Besides obtaining the usual laboratory and chemical analysis, the icterus index of the blood should be determined in all cases. It has been definitely demonstrated that no operative work should be attempted while the icterus index is either increasing or decreasing. Operative procedures should be delayed until a level has been reached.

The coagulation time in jaundiced patients is frequently above normal. Walters¹ reports that in seventy per cent of all cases in which death was caused by postoperative hemorrhage, the preoperative coagulation time was more than nine minutes. Calcium chloride (five cubic centimeters of a ten per cent solution) given intravenously on three successive days usually affords a safe and effective means of lowering the blood coagulation time to within normal limits. In those cases where the desired effect is not obtained, one or more blood transfusions should be given, both before and after the operation.

Patients with jaundice should receive a diet rich in carbohydrates, augmented when necessary by glucose given intravenously, to restore the disordered function of the liver. Dehydration, if present, should be overcome by ingestion of large quantities of fluids for several days before the operation. Jaundiced patients have a tendency to bleed freely during and after the operation in spite of a normal coagulation time. During the operation hemostasis should be carefully obtained and trauma to tissues should be minimized especially to the liver. Therefore, cholecystectomy should not be done at the primary operation.

ACUTE INTESTINAL OBSTRUCTION

Acute intestinal obstruction is always a surgical emergency. The mortality varies according to the site of obstruction, and the elapsed time between the onset of the symptoms and the operation. The chemical changes in the blood assume importance in direct proportion to the site of obstruction and the delay in surgical treatment.

In the early case, before the patient is toxic, surgery may be done immediately and the obstruction relieved with comparative safety. If, how-

ever, the patient is seen late, when toxic and dehydrated, with marked changes in the chemistry of the blood, preoperative treatment is absolutely necessary. The quickest method of restoring the blood chlorides is by an infusion of hypertonic salt solution, but it must be remembered that hypertonic salt solution frequently stimulates peristalsis and in a late case of obstruction may do some damage. A safe procedure is an intravenous injection of a one per cent salt solution to which has been added one hundred grams of glucose. The salt solution may be repeated in two hours. In addition, 2000 cubic centimeters of normal salt solution should be given subcutaneously. Gastric lavage should be done before the operation and as often as necessary postoperatively in order to remove the toxic material from the stomach and upper bowl.

Inhalation anesthesia should not be used, because of the danger of the patient vomiting during the operation, resulting in an aspiration pneumonia. We have found that spinal anesthesia has been very satisfactory.

CARCINOMA OF THE STOMACH

Patients with carcinoma of the stomach are usually poor surgical risks, because of weakness, anemia and dehydration. Much can be done to improve their general condition before surgery.

1. The chemistry of the blood should be determined.

2. The stomach should be washed with normal salt solution twice daily for a week.

3. One thousand cubic centimeters of normal salt solution, with 100 grams of glucose, should be given intravenously for several days. Fluids should also be given subcutaneously. A large amount of fluid is necessary to restore the fluid balance.

4. For the anemia, one or more blood transfusions should be given before the operation.

5. Intravenous salt solution with ten per cent glucose may be given during the operation.

The above management is also applicable to patients with pyloric obstruction due to an ulcer. In this condition, alkalosis should be suspected if much vomiting has occurred, also if the patient has been taking alkalis for a long period of time. This may be illustrated by the following case:

REPORT OF CASE

The patient was a male, age forty, with a history of duodenal ulcer for the past twenty years. He had taken alkalis at various intervals during this period. For eight days before entering the hospital he had vomited all food eaten. On entering the hospital the patient was extremely nervous, mentally confused, vomiting, flushed face, with muscular contractions of both arms. His pulse count was eighty, with blood pressure of 90/87. Blood count was as follows:

Hemoglobin	82 per cent
Red blood cells	4,580,000
Leucocytes	16,800
Polys	50 per cent
Lymphocytes	38 per cent

Chemistry of the blood:

Non-proteid nitrogen	85 mg. per 100 cc. of blood
Creatinin	3 mg. per 100 cc. of blood
Sodium chlorides	258 mg. per 100 cc. of blood
Carbon dioxid combining power	111 per cent
Blood calcium	9.8

The patient was given 500 cubic centimeters of three per cent salt solution intravenously, daily for seven days. He was also given ammonium chloride, grains fifteen capsules t. i. d. The blood chemistry gradually improved until nine days later it read as follows:

Carbon dioxid combining power	41 per cent
Non-proteid nitrogen	30 mg. per 100 cc. of blood
Sodium chlorides	410 mg. per 100 cc. of blood

Gastric analysis eight days later was as follows:

Free hydrochloric	40 per cent
Total acidity	76

The usual changes in the chemistry of the blood in alkalosis are an increase of the blood urea nitrogen, an increase of the carbon dioxide combining power, with a corresponding decrease in the chlorides. The treatment consists of:

1. Discontinuing all alkalis.
2. Intravenous injections of hypertonic salt solution with glucose.
3. Oral administration of ammonium chloride until the chemistry of the blood becomes normal.

In closing one can do no better than to quote Lord Berkeley Moynihan, who says:

"In the future we must look for advance in surgery not so much to improve methods of technic as to a wiser application of a technic now almost perfected. It is therefore our task to improve surgical judgment and to that end a long survey of past experience is essential, and it is most necessary for us to devote a greater measure of attention to the preparation and after care of the patient. It has been said that surgery has been made safe for the patient; we must now make the patient safe for surgery."

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REFERENCE

1. Walters, Waltman: Obstructive Jaundice—Physiologic and Surgical Aspects. The Mayo Foundation for Medical Education and Research. 1931.

MEDICAL COSTS—HOW HEALTH INSURANCE AND GROUP MEDICINE MAY LOWER MEDICAL COSTS*

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THE trend of health insurance and group medicine as the major means of reducing the costs of medical care to the great wage-earning class needs reviewing at this time of the country's most serious depression, in order that we may understand just what is happening and ask ourselves as one of the two parties concerned whether we wish matters to go on any further without protest and organized effort on our part to direct the movement into a safer and more effective channel.

HOW INDUSTRY RECOGNIZED ITS HEALTH RESPONSIBILITIES

Industry recognized long ago the need for the stabilizing and protecting effect of medical support, and legislation made secure the responsibility of all industry to its cripples from accident or disease attributable to the work. In our efforts to distribute more equably the fruits of things made possible by the advances of science, there

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